

**What Is Claimed Is:**

1                    1.     An oven conveyor alignment system adapted for use in an  
2                    oven having an elongated axis, the system comprising:  
3                    a terminal roller having two ends positioned transaxially with  
4                    respect to the oven elongated axis;  
5                    a conveyor belt having an elongated axis, the conveyor belt rotating  
6                    around the terminal roller;  
7                    means for aligning the conveyor belt elongated axis with the oven  
8                    elongated axis by adjusting the position of the conveyor belt with respect  
9                    to the two ends of the terminal roller;  
10                   a camera positioned toward one of the ends of the terminal roller  
11                   for generating a digital image signal corresponding to the conveyor belt's  
12                   position; and  
13                   means for controlling the means for aligning in response to the  
14                   digital image signal.

1                   2     The oven conveyor alignment system of Claim 1 further  
2                   comprising:  
3                   a digital medium for storing the digital image signal as a pixel  
4                   representation of the conveyor belt position.

1                   3.     The oven conveyor alignment system of Claim 2 wherein the  
2                   camera has a scan interval whereby the camera generates a new pixel

3 representation according to the scan interval.

1 4. The oven conveyor alignment system of Claim 3 wherein the  
2 means for aligning comprises a tensioning assembly connected to a roller  
3 shaft located at one of the ends of the terminal roller.

1 5. The oven conveyor alignment system of Claim 4 wherein the  
2 means for controlling comprises a control computer that recognizes an  
3 offset in the pixel representation of the conveyor belt position and sends a  
4 signal to the tensioning assembly in order to vary the tension on the  
5 conveyor belt at the one end of the terminal roller in order to vary the  
6 conveyor belt position and correctly align the conveyor belt elongated axis  
7 with the oven elongated axis.

1 6. The oven conveyor alignment system of Claim 4 wherein the  
2 tensioning assembly comprises:  
3 a sprocket wheel;  
4 a motor mechanically connected to the sprocket wheel; and  
5 an adjustment nut mechanically connected to the sprocket wheel  
6 by a drive chain, wherein movement of the adjustment nut controls  
7 transaxial movement of the terminal roller, and wherein transaxial  
8 movement of the terminal roller controls the alignment of the conveyor.

1 7. The oven conveyor alignment system of Claim 1 wherein the

2 camera is protected by an external housing.

1 8. The oven conveyor alignment system of Claim 5 wherein the  
2 control computer operates in accordance with instructions, the instructions  
3 comprising:

4 an alarm trip point corresponding to an alarm magnitude of pixel  
5 misalignment; and

6 a shut down trip point corresponding to a shut down magnitude of  
7 pixel misalignment.

1 9. The oven conveyor alignment system of Claim 1 wherein the  
2 means for aligning can alternatively be controlled either manually or  
3 automatically.

1 10. The oven conveyor alignment system of Claim 1 wherein the  
2 camera is alternatively focused automatically or manually.

1 11. A method of maintaining oven conveyor alignment with  
2 respect to a terminal roller having two ends, wherein an oven conveyor  
3 belt has an elongated axis and the conveyor belt is rotating around the  
4 terminal roller, the method comprising:

5 positioning and focusing a camera to view the oven conveyor belt  
6 alignment with respect to one of the ends of the terminal roller;

7 generating a digital image signal of the oven conveyor belt with

8       respect to the end of the terminal roller; and  
9               using the digital image signal to make necessary  
10       adjustments to the oven conveyor alignment.

1  
2               12.    The method of Claim 11, further comprising storing the  
3       digital image signal as a pixel representation of oven conveyor alignment  
4       with respect to the end of the terminal roller.

1               13.    The method of Claim 11, further comprising repeatedly the  
2       generating a digital image signal of the oven conveyor according to a  
3       selected scan interval.

1               14.    The method of Claim 12, wherein using the digital image  
2       signal to make necessary adjustments on the conveyor alignment  
3       comprises:  
4               comparing the stored pixel representation of conveyor alignment to  
5       a coordinate system representing zero error in conveyor alignment to  
6       generate an electrical signal based on misalignment;  
7               sending the electrical signal to a motor able to adjust tension on  
8       one of the ends of the terminal roller; and  
9               adjusting the tension on one of the ends of the terminal roller to  
10       correct the misalignment.

1               15.    The method of Claim 11, further comprising projecting the

2 digital image signal on a video monitor for use by an operator.

1 16. The method of Claim 11, further comprising protecting the  
2 camera from physical damage using an external camera housing.